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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/574,900	05/19/2000	Xavier Michel	SONY-T0591	1240

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EXAMINER	
DASTOURI, MEHRDAD	
ART UNIT	**PAPER NUMBER**
2623	

DATE MAILED: 06/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/574,900	MICHEL ET AL.	
	Examiner	Art Unit	
	Mehrdad Dastouri	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-16 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-16 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 28 August 2000 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Schultz et al (A Bayesian Approach to Image Expansion for Improved Definition; IEEE Paper ISBN: 1057-7149).

Regarding Claim 1, Schultz et al disclose a picture processing method comprising:

preparing a picture energy function in advance (Pages 235-236, Sections IV and V, Formulas 20 and 21, Function Ω [z, T]);

enlarging an input picture (Page 234; Figure 2);

calculating gradient values of the energy function in a pixel in the enlarged picture (Page 236, Column 2, Gradient $g_{(n)}$);

adding a sum of the gradient of said energy function and a value not dependent on the input picture to said pixel (Page 237, Page 238, Column 1, Consistency term, Temperature Parameter λ); and

updating the resulting value of said pixel for picture quality adjustment (Page 237, Column 2, Gradient Projection Algorithm, Steps 4 and 5; Page 238, Column 1, Gradient Descent Algorithm, Steps 4 and 5).

Regarding Claim 2, Schultz et al further disclose the picture processing method according to Claim 1 wherein the updating processing of the pixel value is repeated a plurality of number of times (Page 237, Column 2, Gradient Projection Algorithm, Steps 4 and 5; Page 238, Column 1, Gradient Descent Algorithm, Steps 4 and 5).

Regarding Claim 3, Schultz et al further disclose the picture processing method according to Claim 1 wherein said value not dependent on the input picture is found in advance from a plurality of pixels (Pages 237-238, Formulas 33 and 34).

Regarding Claim 4, Schultz et al disclose a picture processing method comprising:

preparing an energy function of a picture varied depending on an input picture (Page 236, Column 2, Formula 21, Function Ω [z, T]);

enlarging the input picture (Page 234; Figure 2);

calculating a value which decreases the energy in a pixel of the enlarged picture (Pages 236-237, Negative gradient $-g_{(n)}$);

adding said energy decreasing value to said pixel (Page 237, Column 2, Gradient Projection Algorithm, Steps 3 and 4; Page 238, Column 1, Gradient Descent Algorithm, Steps 3 and 4); and

updating the resulting value of said pixel for picture quality adjustment (Page 237, Column 2, Gradient Projection Algorithm, Steps 4 and 5; Page 238, Column 1, Gradient Descent Algorithm, Steps 4 and 5).

Regarding Claim 5, Schultz et al further disclose the picture processing method according to Claim 4 wherein the energy function of the picture varied depending on the

input picture is the sum total of the pixel energies changed with pixel values of plural pixels in the vicinity of each pixel (Page 237, Column 2, Gradient Projection Algorithm; Page 238, Column 1, Gradient Descent Algorithm).

Regarding Claim 6, Schultz et al further disclose the picture processing method according to Claim 4 wherein the energy decreasing value is a product of a gradient value of the energy function in the pixel of the enlarged picture with the value not dependent on the input picture (Page 237, Column 1; Value "-1" to generate - $g_{(n)}$).

Regarding Claim 7, Schultz et al further disclose the picture processing method according to Claim 4 wherein the updating processing of the pixel value is repeated a plurality of number of times (Page 237, Column 2, Gradient Projection Algorithm, Steps 4 and 5; Page 238, Column 1, Gradient Descent Algorithm, Steps 4 and 5).

With regards to Claim 8, arguments analogous to those presented for Claims 1 and 4 are applicable to claim 8.

Regarding Claim 9, Schultz et al disclose a picture processing apparatus comprising:

holding means for holding an energy function of a picture prepared in advance (Pages 235-236, Sections Iv and V, Formulas 20 and 21, Function Ω [z, T]);

enlarging means for enlarging an input picture (Page 234; Figure 2);

calculating means for calculating a gradient value of said energy function in a pixel in said enlarged picture (Page 236, Column 2, Gradient $g_{(n)}$); and

updating means for adding to said pixel a product of a gradient value of the energy function with a value not dependent on the input picture (Value "-1" to generate -

$g_{(n)}$) and for updating the resulting value of said pixel (Pages 237, Column 2, Gradient Projection Algorithm, Steps 4 and 5; page 238, Column 1, Gradient Descent Algorithm, Steps 4 and 5).

Regarding Claim 10, Schultz et al further disclose the picture processing apparatus according to Claim 9 wherein the calculating processing by said calculating means and the updating processing by said updating means are repeated a plurality of number of times (Page 237, Column 2, Gradient Projection Algorithm, Steps 4 and 5; Page 238, Column 1, Gradient Descent Algorithm, Steps 4 and 5).

Regarding Claim 11, Schultz et al further disclose the picture processing apparatus according to Claim 9 wherein said value not dependent on the input picture is found in advance from a plurality of pixels Page 237, Column 2, Section V.B).

Regarding Claim 12, Scultz et al disclose a picture processing apparatus comprising:

holding means for holding a previously prepared energy function of a picture varied depending on an input picture (Pages 235-236, Sections IV and V, Formulas 20 and 21, Function Ω [z, T]);

enlarging means for enlarging said input picture (Page 234; Figure 2);

calculating means for calculating an energy decreasing value in a pixel in the enlarged picture (Pages 236-237, Negative gradient $-g_{(n)}$); and

updating means for adding said energy decreasing value to said pixel and for updating the resulting pixel value(Page 237, Column 2, Gradient Projection Algorithm, Steps 4 and 5; Page 238, Column 1, Gradient Descent Algorithm, Steps 4 and 5).

Regarding Claim 13, Schultz et al further disclose the picture processing apparatus according to Claim 12 wherein said holding means holds the sum total of pixel energies varied depending on pixel values of plural pixels in the vicinity of each pixel as a function of the energy of the picture varied depending on said input picture (Page 237, Column 2, Gradient Projection Algorithm; Page 238, Column 1, Gradient Descent Algorithm).

Regarding Claim 14, Schultz et al further disclose the picture processing apparatus according to Claim 12 wherein said updating means adds a product of a gradient value of said energy function in a pixel in the enlarged picture with a value not dependent on the input picture as said energy decreasing value to said pixel (Page 237, Column 1; Value "-1" to generate - $g_{(n)}$).

Regarding Claim 15, Schultz et al further disclose the picture processing apparatus according to Claim 12 wherein said calculating operation by said calculating means and said updating operation by said updating means are repeated a plurality of number of times (Page 237, Column 2, Gradient Projection Algorithm, Steps 4 and 5; Page 238, Column 1, Gradient Descent Algorithm, Steps 4 and 5).

Regarding Claim 16, Schultz et al further disclose a picture processing apparatus comprising:

holding means for holding an energy function of a picture prepared in advance (Pages 235-236, Sections IV and V, Formulas 20 and 21, Function Ω [z, T]);

enlarging means for enlarging an input picture (Page 234; Figure 2);

calculating means for calculating an energy decreasing value in a pixel of the picture enlarged by said enlarging means (Pages 236-237, Negative gradient $-g_{(n)}$); and

updating means for adding said energy decreasing value to said pixel to update the pixel value (Page 237, Column 2, Gradient Projection Algorithm, Steps 3 and 4; Page 238, Column 1, Gradient Descent Algorithm, Steps 3 and 4); said calculation operation by said calculating means and the updating operation by said updating means being repeated a pre-set number of times (Page 237, Column 2, Gradient Projection Algorithm, Steps 4 and 5; Page 238, Column 1, Gradient Descent Algorithm, Steps 4 and 5).

Other prior art cited

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,535,632 to Park et al.

Contact Information

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mehrdad Dastouri whose telephone number is (703) 305-2438. The examiner can normally be reached on Monday to Friday from 8:00 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MEHRDAD DASTOURI
PRIMARY EXAMINER

Mehrdad Dastouri
Primary Examiner
Art Unit 2623
June 14, 2004